

US EPA ARCHIVE DOCUMENT

**MODIFICATION OF THE HAZARDOUS WASTE PROGRAM:  
HAZARDOUS WASTE LAMPS**

***REGULATORY FLEXIBILITY SCREENING ANALYSIS***

*Final Document*

*Post-OMB Review*

Economics, Methods and Risk Analysis Division  
Office of Solid Waste  
U.S. EPA

March 4, 1999

**Below is a summary of changes made to this document in response to review by the Office of Management and Budget (OMB):**

- \* The title of this document was changed.
- \* Minor editorial changes were made to this document.
- \* An insert was added explaining that this document covers only spent mercury-containing fluorescent lamps.

## Scope of Analysis

The final rule: Modification of the Hazardous Waste Program: Hazardous Waste Lamps, covers all hazardous waste lamps. Mercury-containing fluorescent lamps are estimated to represent 98 to 99 percent of the total annual generation of spent hazardous waste lamps. High-intensity discharge (HID) lamps represent most of the remaining quantity. Miscellaneous hazardous waste lamps covered by this rule represent a comparatively negligible proportion of the total annual generation. This *Regulatory Flexibility Screening Analysis* addresses only mercury-containing fluorescent lamps. Incorporation of HID and miscellaneous hazardous waste lamps into the scope of this analysis is not likely to impact the findings.

## ACKNOWLEDGMENTS

The Agency recognizes ICF Incorporated for the overall organization and development of this report. ICF developed the database and procedure that allowed for this analysis. Lyn D. Luben, Gary L. Ballard, and W. Barnes Johnson, all of the U.S. Environmental Protection Agency, Office of Solid Waste, provided guidance and review.

# REGULATORY FLEXIBILITY SCREENING ANALYSIS FOR FINAL ACTION ON HAZARDOUS WASTE LAMPS

The purpose of this analysis is to examine the impacts of the final action on small entities. Under the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA), EPA is required to determine whether a notice-and-comment rulemaking is likely to result in a significant impact on a substantial number of small entities (i.e., small businesses, small local governments, and small non-profit organizations). If a notice-and-comment rule is expected to result in a substantial number of small entities incurring significant impacts, then the Agency must also prepare a Regulatory Flexibility Analysis and must conduct small entity outreach as part of the rulemaking process.

This document describes EPA's assessment of the small entity impacts expected to be incurred as a result of the final action. Section 1 describes the purpose of the document and presents background information on the rulemaking. Section 2 describes the screening analysis performed by EPA to assess small entity impacts. Finally, Section 3 summarizes the analytical findings, concluding that no significant small entity impacts are anticipated as a result of the final action.

## 1. Background and Summary

A majority of the currently disposed mercury-containing lamps fail the Toxicity Characteristic (TC) and are, therefore, hazardous wastes under RCRA. Currently, as stipulated by federal regulations, spent mercury-containing lamps that exhibit the TC must be disposed of according to full Subtitle C hazardous waste regulations. Many spent lamp generators, however, do not realize that lamps must be managed as hazardous waste. To make matters even more ambiguous for generators, lamps generated in homes or in facilities small enough to be classified as conditionally exempt small quantity generators (CESQG) are not considered hazardous waste even if the lamps fail the TC.

Each fluorescent lamp contains a small amount of mercury that emits visible and ultraviolet light when electricity is passed through it. Phosphor powder on the inside of the glass tube is used to convert ultraviolet light into visible light. Most of the mercury in a spent fluorescent lamp settles in the end caps of the lamp, while almost all of the remainder is incorporated in the phosphor powder along the length of the glass tube. Spent lamps that are improperly disposed may result in the mercury being released into the environment, thereby causing health risks including, in humans, neurotoxicity, and, in fish, birds, and mammals, death, reduced reproductive success, impaired growth and development, and behavioral abnormalities.

On July 24, 1994, in order to reduce these risks, clarify regulations, and improve compliance rates for the management of mercury-containing lamps, EPA published a proposed rule that presented two options for the management of spent lamps (58 FR 39288). Both the universal waste (UW) and conditional exemption (CE) options would have reduced the regulatory burden on spent lamp generators, potentially leading to higher compliance rates.

Under the proposed UW option, lamps that fail the TC would be subject to streamlined UW regulations. UW regulations include guidelines for the proper packaging of lamps, storage of lamps, EPA notification, and responding to releases. Under this regulatory scheme, transporters of spent lamps would face guidelines similar those encountered by facilities, and destination sites receiving the lamps would be subject to RCRA hazardous waste regulations.

The CE option would have exempted spent lamps from RCRA hazardous waste regulations if generators meet two conditions. First, the lamps would have to be either disposed in a municipal landfill permitted by a state/Tribe with an EPA-approved municipal solid waste permitting program or sent to a registered mercury recycling facility. Second, facilities would have to keep track of all lamp shipments. Under this option, lamps managed in compliance with CE regulations would either be shipped to Subtitle D facilities, Subtitle C facilities, or recyclers.

Note that EPA's choice of an option was not expected to completely determine how lamps would be managed in individual states. States already have the option of including lamps within a UW program, and many have already done so. Furthermore, states that have not chosen to adopt UW programs, or have not included lamps within UW, would not be obligated to do so in response to EPA's decision. Similarly, EPA's selection of CE would not have forced all states to treat lamps as CE. Thus, while EPA's choice is likely to influence many states in their regulation of lamps, it is unlikely to affect more than a minority of facilities nationwide.

EPA has selected the previously proposed UW option as its final action. The regulations are intended to streamline and reduce the costs of compliance, which should result in an increase in the percentage of spent lamps that are managed properly. This action should also help encourage uniformity among states in the handling and processing of spent lamps. Currently, there is a wide degree of variation across states in the rules governing the transportation, treatment, and disposal of spent lamps. These rules range from straight adoption of the current federal requirements to mandatory recycling.

The analysis presented in this document draws upon the economic assessment (EA) prepared by EPA for this rulemaking in accordance with Executive Order 12866.

## **2. Screening Analysis Methods and Findings**

An initial assessment of small business impacts involves four major tasks: (1) defining and identifying "small entities" for the rule being analyzed; (2) determining what number constitutes a "substantial number" of these entities; (3) determining how "significant impacts" will be measured; and (4) completing a screening analysis. If the initial assessment determines that a substantial number of small entities may face significant impacts as a result of the rule being analyzed, then small entity outreach and a formal Regulatory Flexibility Analysis may be required.

### ***Defining "Small Entities" Affected by the Rule***

This rulemaking will affect all entities, including businesses, local governments, and non-profit organizations, that generate more than 100 kg of spent lamps (roughly 350 - 450) per month. In general, the rate at which spent lamps are generated is a function of two key factors. One of these factors is the amount of lighted floor space at the facility (because more lamps are required to light larger areas). The second factor affecting the generation rate is whether used lamps are replaced individually as each lamp burns out ("attrition relamping" or "spot relamping") or whether they are replaced systematically in large groups prior to burnout ("group relamping"). In the case of spot relamping, EPA estimates that entities

will not be affected by the rule unless they are responsible for relamping an area exceeding about 380,000 square feet of floor space.<sup>1</sup> Under group relamping, the corresponding figure is about 6,000 square feet.<sup>2</sup> Entities that will be directly affected by the rule can be divided into the following categories:<sup>3</sup>

- Operators of non-residential buildings (SIC 6512 or NAICS 53112); and
- Other businesses, local governments, and non-profit organizations that own or rent commercial or industrial space and that conduct their own relamping. (These entities are expected to include most industrial codes.)

For SIC 6512, this analysis uses the term “small entity” to refer to any entity that has, including itself and all of its domestic and foreign affiliates, annual receipts of less than \$5 million. This definition is consistent with the size standards established by the Small Business Administration (SBA) in 13 CFR Sections 121.103 and 121.201 on January 31, 1996 and as reprinted by SBA on January 7, 1998 (63 *Federal Register* 902). For other entities, the threshold used to classify “small entity” is 1,000 or fewer employees. This definition was selected to be relatively inclusive, consistent with the SBA standards.

EPA also considered whether the rule might significantly affect consolidation facilities (i.e., facilities that collect or store used lamps prior to recycling or disposal) but believes that few if any consolidation facilities exist at present or will exist in the future as independent economic entities.

#### ***Determining What Number Constitutes a Substantial Number***

This initial assessment applies a figure corresponding to 20 percent of small entities in determining whether a “substantial number” of small entities are likely to be impacted by the rule. For sensitivity analysis purposes, EPA has also applied an alternate figure corresponding to 5 percent of small entities.

#### ***Measuring “Significant Impacts”***

To evaluate the impact that a small entity is expected to incur as a result of the rule, this analysis calculates the entity’s ratio of annualized compliance costs as a percentage of sales (for small businesses), as a percentage of annual governmental revenues (for small governments), and as a percentage of annual operating expenditures (for small non-profit organizations). As a nominal measure of small entity impacts, entities are classified as facing potentially “significant” impacts if this ratio exceeds 3 percent. For sensitivity analysis purposes, EPA has also applied an alternate figure of 1 percent.

---

<sup>1</sup> See page 5 of Section 2 of the EA.

<sup>2</sup> See page 5 of Section 2 of the EA.

<sup>3</sup> Used lamp recycling facilities may also be affected by the rule, although any impacts on these facilities would be indirect impacts.

*Conducting the Screening Analysis*

In a companion document (the Economic Assessment), EPA estimated the per-facility costs associated with the UW final action, as well as the CE option that was not selected. As shown in Exhibit 1 below, EPA estimates that the UW final action will result in cost *savings* to affected entities relative to the current requirements to manage used lamps as hazardous waste. Since the costs in Exhibit 1 are per facility costs they are independent of assumptions regarding regulatory compliance rates. Because the rule is not expected to result in a net cost to *any* affected entities, adverse impacts are not anticipated.

**Exhibit 1:  
Average Annual Savings Per Facility Relative to Subtitle C Baseline Costs  
- Full Compliance -**

Scenario	Small Facilities					Medium Facilities		Large Facilities
	----- facility size range in square feet -----							
	1,001- 5,000	5,001- 10,000	10,001- 25,000	25,001- 50,000	50,001- 100,000	100,001- 200,000	200,001- 500,000	>500,000
	----- Projected Average <b>Cost Savings</b> per Facility -----							
UW Final Action	\$0	\$32	\$33	\$36	\$57	\$504	\$489	\$520
CE Option	\$0	\$44	\$56	\$83	\$145	\$636	\$796	\$1,185

Costs could increase for entities that are not complying with current requirements but do come into compliance after the current rulemaking. These costs, however, would not be attributable to EPA’s action. In any case, EPA believes that even these costs would not result in significant impacts, as explained below. Exhibit 2 below shows the average cost per facility under the full Subtitle C baseline and the UW final action. Costs under the CE option are shown for purposes of comparison. The per facility compliance cost for facilities between 1,001 and 5,000 square feet is zero because facilities in this size range are CESQG, which have no costs allocated to them.

**Exhibit 2:  
Average Annual Subtitle C Baseline and Post-Rule Costs, Per Facility**

Scenario	Small Facilities					Medium Facilities		Large Facilities
	----- facility size range in square feet -----							
	1,001- 5,000	5,001- 10,000	10,001- 25,000	25,001- 50,000	50,001- 100,000	100,001- 200,000	200,001- 500,000	>500,000
	----- <b>Total Costs</b> per Facility -----							
Full Subtitle C Baseline Management Costs	\$0	\$73	\$117	\$219	\$409	\$1,037	\$1,771	\$3,204
UW Final Action	\$0	\$41	\$84	\$183	\$352	\$533	\$1,282	\$2,684
CE Option	\$0	\$29	\$61	\$136	\$264	\$401	\$975	\$2,019

In order for these costs to result in a significant impact on small entities, the sales (for small businesses), annual governmental revenues (for small governments), and/or annual operating expenditures (for small non-profit organizations) would have to be less than the cost divided by the three percent threshold for significant impacts (one percent for sensitivity purposes). Exhibit 3 shows the minimum sales, revenues, or expenditures required to avoid significant impacts.

**Exhibit 3:  
Minimum Annual Sales, Revenues, or Expenditure Required to Avoid Significant Impacts  
of Rule, Assuming Non-Compliance in the Baseline**

Scenario	Small Facilities					Medium Facilities		Large Facilities	
	----- facility size range in square feet -----								
	1,001- 5,000	5,001- 10,000	10,001- 25,000	25,001- 50,000	50,001- 100,000	100,001- 200,000	200,001- 500,000	>500,000	
<i>Assuming a Three Percent Threshold for Significant Impacts</i>									
UW Final Action	\$0	\$1,367	\$2,800	\$6,100	\$11,733	\$17,767	\$42,733	\$89,467	
CE Option	\$0	\$967	\$2,033	\$4,533	\$8,800	\$13,367	\$32,500	\$67,300	
<i>Assuming the Alternative Threshold of One Percent for Significant Impacts</i>									
UW Final Action	\$0	\$4,100	\$8,400	\$18,300	\$35,200	\$53,300	\$128,200	\$268,400	
CE Option	\$0	\$2,900	\$6,100	\$13,600	\$26,400	\$40,100	\$97,500	\$201,900	

EPA believes that these minimum sales, revenues, or expenditures are lower than can reasonably be expected to occur. The annual sales of operators of non-residential buildings (SIC 6512) consists of the rent they collect from their tenants. Using the assumption that rent is charged at an annual rate of \$10 per square foot, no impacts would arise under either the three percent threshold or the sensitivity threshold of one percent. (In reality, the average rent for commercial real estate is believed to exceed \$10 per square foot.<sup>4</sup>)

Similarly, other types of businesses as well as governments and non-profit organizations can reasonably be expected to have sales, revenues, or expenditures in excess of the total wages paid to employees. Under the conservative assumption that these businesses employ at least one person per 1,000 square feet of floor space and pay these staff at least \$10,000 per person per year (i.e., \$5 per hour), then total sales, revenues, and/or expenditures can be estimated to exceed \$10 per square foot of floor space

---

<sup>4</sup> Based on current rates reported by real estate management firms in five selected U.S. markets, EPA believes that rent for most commercial space ranges from \$15 to \$25 per square foot.

(i.e., \$10,000 per employee divided by 1,000 square feet per employee). Again, no impacts would arise under either the three percent threshold or the sensitivity threshold of one percent.

Using these assumptions, EPA calculated the implied level of sales, revenues, or expenditures for each building size category. These levels, which are presented in Exhibit 4, exceed the minimum levels required to avoid significant impacts (as presented in Exhibit 3).<sup>5</sup>

**Exhibit 4:  
Minimum Estimated Annual Sales, Revenues, or Expenditures**

Scenario	Small Facilities					Medium Facilities		Large Facilities	
	----- facility size range in square feet -----								
	1,001-5,000	5,001-10,000	10,001-25,000	25,001-50,000	50,001-100,000	100,001-200,000	200,001-500,000	>500,000	
UW Final Action	\$30,000	\$75,000	\$175,000	\$375,000	\$750,000	\$1,150,000	\$3,500,000	\$10,000,000	

Even in the unlikely event that any small entity were to incur a significant impact under the scenarios described above, the rule would not generate significant impacts on a *substantial number* of small businesses unless 20 percent or more of entities (five percent or more under the alternative threshold for “substantial number”) incur significant impacts. This seems particularly unlikely.

### 3. Summary and Conclusion

EPA estimates that its UW final action would result in savings to affected entities relative to the current requirements to manage used lamps as hazardous waste. Because the rule is not expected to result in a net cost to *any* affected entities, adverse impacts are not anticipated. Costs could increase for entities that are not complying with current requirements, but even these costs (which are not properly attributable to the current rulemaking) would not be expected to result in significant impacts on a substantial number of small entities. Consequently, EPA has determined that preparation of a formal Regulatory Flexibility Analysis is unnecessary.

---

<sup>5</sup> Estimated sales, revenues, or expenditures are based on an assumed median facility within each size range. This approach is consistent with the approach used to estimate facility compliance costs.